

What is claimed is:

- 1    1.     A method comprising:  
2           performing a static branch prediction for a branch; and  
3           overriding the static branch prediction with a dynamic branch prediction  
4    when the static branch prediction has previously been incorrect;  
5           wherein the static branch prediction and dynamic branch prediction are  
6    performed in a single pipeline stage.
- 1    2.     The method of claim 1 wherein the static branch prediction comprises  
2    predicting taken or not taken based on a direction of the branch.
- 1    3.     The method of claim 2 wherein predicting taken or not taken comprises  
2    predicting based on a displacement field of a branch instruction.
- 1    4.     The method of claim 1 wherein the static branch prediction comprises:  
2           determining the direction of the branch; and  
3           if the direction of the branch is backward, then predict taken.
- 1    5.     The method of claim 1 wherein the dynamic branch prediction is performed  
2    by a dynamic branch predictor having fewer than 16 entries.
- 1    6.     The method of claim 1 further comprising:  
2           overriding the static branch prediction with a dynamic branch prediction  
3    when the dynamic branch prediction has previously been incorrect.
- 1    7.     The method of claim 1 further comprising updating the dynamic branch  
2    prediction when the static branch prediction is incorrect.
- 1    8.     A processor comprising:

2           a static branch predictor to statically predict whether a branch is taken or not  
3 taken based on a direction of the branch; and  
4           a dynamic branch predictor to conditionally override the static branch  
5 predictor.

1    9.     The processor of claim 8 wherein the static branch predictor includes a  
2 circuit to predict the branch will be taken when the direction of the branch is  
3 backward.

1    10.    The processor of claim 8 wherein the static branch predictor includes a  
2 circuit to predict the branch will be taken when the direction of the branch is  
3 forward.

1    11.    The processor of claim 8 wherein the dynamic branch predictor includes a  
2 plurality of entries to hold branch prediction information for branches having had  
3 incorrect static predictions.

1    12.    The processor of claim 11 further comprising a branch execution unit to  
2 determine the correctness of the branch prediction, and to conditionally update at  
3 least one of the plurality of entries in the dynamic branch predictor.

1    13.    The processor of claim 8 wherein the static branch predictor and the  
2 dynamic branch predictor are coupled to operate in a single pipeline stage.

1    14.    A processor comprising:  
2           a static branch predictor to statically predict whether a branch is taken or not  
3 taken in one pipeline stage; and  
4           a dynamic predictor to conditionally override the static branch predictor in  
5 the one pipeline stage.

1 15. The processor of claim 14 wherein the static branch predictor includes a  
2 circuit to predict whether the branch is taken based on a displacement field in a  
3 branch instruction.

1 16. The processor of claim 14 wherein the static branch predictor includes a  
2 circuit to predict the branch will be taken when the direction of the branch is  
3 backward.

1 17. The processor of claim 14 wherein the static branch predictor includes a  
2 circuit to predict the branch will be taken when the direction of the branch is  
3 forward.

1 18. The processor of claim 14 wherein the dynamic branch predictor is  
2 configured to provide a branch prediction only when previous static predictions  
3 have been incorrect.

1 19. The processor of claim 14 wherein the dynamic branch predictor includes a  
2 table for entries corresponding to previously incorrect static branch predictions.

1 20. The processor of claim 14 further comprising a branch execution unit to  
2 determine the correctness of the branch prediction, and to conditionally update the  
3 dynamic branch predictor.

1 21. An electronic system comprising:  
2 first and second antennas;  
3 an amplifier to amplify communications signals received by the first  
4 antenna; and  
5 a processor coupled to the amplifier, the processor including a static branch  
6 predictor to statically predict whether a branch is taken or not taken based on a

7 direction of the branch, and a dynamic branch predictor to conditionally override the  
8 static branch predictor.

1 22. The electronic system of claim 21 wherein the static branch predictor  
2 includes a circuit to predict the branch will be taken when the direction of the  
3 branch is backward.

1 23. The electronic system of claim 21 wherein the dynamic branch predictor  
2 includes a plurality of entries to hold branch prediction information for branches  
3 having had incorrect static predictions.

1 24. The electronic system of claim 23 wherein the processor further comprises a  
2 branch execution unit to determine the correctness of the branch prediction, and to  
3 conditionally update at least one of the plurality of entries in the dynamic branch  
4 predictor.

1 25. The electronic system of claim 21 wherein the static branch predictor and the  
2 dynamic branch predictor are coupled to operate in a single pipeline stage.